

1 Introduction to the BTS3012

About This Chapter

This part describes the components of the BTS3012 and its market orientation. It also describes the physical structure, software structure, and logical structure of the BTS3012.

[1.1 Components of the BTS3012 System](#)

The BTS3012 system consists of the BTS3012 cabinet, antenna subsystem, site maintenance equipment, and auxiliary equipment.

[1.2 Overview of the BTS3012](#)

The BTS3012 is an indoor macro BTS using Double-Transceiver Unit (DTRU). One BTS3012 cabinet supports up to 12 transceivers (TRXs). The BTS3012 can smoothly evolve into the GSM/EDGE Radio Access Network (GERAN). Thus, it is widely used in areas with high traffic volume and wide coverage requirement.

[1.3 Physical Structure of the BTS3012](#)

The BTS3012 has the following components: BTS3012 cabinet, antenna system, and Operation and Maintenance (OM) equipment.

[1.4 Software Structure of the BTS3012/BTS3012AE](#)

The BTS3012/BTS3012AE software consists of the signaling processing software, baseband signal processing software, OM software, and transmission device control software.

[1.5 Logical Structure of the BTS3012](#)

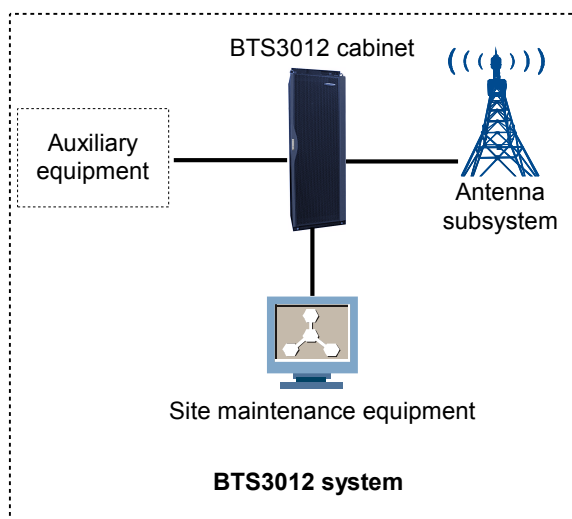
The BTS3012 consists of the following logical subsystems: common subsystem, signal protection subsystem, DTRU subsystem, DAFU subsystem, antenna subsystem, and power subsystem.

1.1 Components of the BTS3012 System

The BTS3012 system consists of the BTS3012 cabinet, antenna subsystem, site maintenance equipment, and auxiliary equipment.

Figure 1-1 shows the BTS3012 system.

Figure 1-1 BTS3012 system



BTS3012 Cabinet

As the core of the BTS system, the **BTS3012 cabinet** processes baseband signals and RF signals.

Antenna Subsystem

The **antenna subsystem** receives UL signals and transmits DL signals on the Um interface.

Site Maintenance Equipment

The equipment fulfills the **OM functions of the BTS**, such as security management, alarm management, data configuration, and maintenance management. The BTS3012 supports three **OM modes of the BTS**, that is, Site Maintenance Terminal, LMT, and Network iManager.

Auxiliary equipment

The BTS3012 can be configured with the following auxiliary equipment: **Sidepower**, **EMU**, **EAC-2** and various **sensors**. The auxiliary equipment fulfills the following functions: converting the power supply, monitoring the environment of the equipment room and the BTS, and reporting environment alarms.

1.2 Overview of the BTS3012

The BTS3012 is an indoor macro BTS using Double-Transceiver Unit (DTRU). One BTS3012 cabinet supports up to 12 transceivers (TRXs). The BTS3012 can smoothly evolve into the GSM/

EDGE Radio Access Network (GERAN). Thus, it is widely used in areas with high traffic volume and wide coverage requirement.

The BTS3012 has the following features:

- One BTS3012 cabinet supports up to 12 TRXs and multiple cabinets support up to 36 TRXs.
- Power Boost Technology (PBT): The maximum output power of the TRX can reach up to 100 W.
- Static sensitivity of the TCH/FS channel: -112.5 dBm (a typical value in normal temperature)
- Transmit diversity and 4-way receive diversity are supported.
- Multiple transmission modes: E1, T1, STM-1, microwave, and satellite transmission are supported.
- Multiband application: The BTS3012 supports hybrid networking over 850 MHz, 900 MHz, 1800 MHz, and 1900 MHz frequency bands, meeting operators' deployment requirement in different regions.

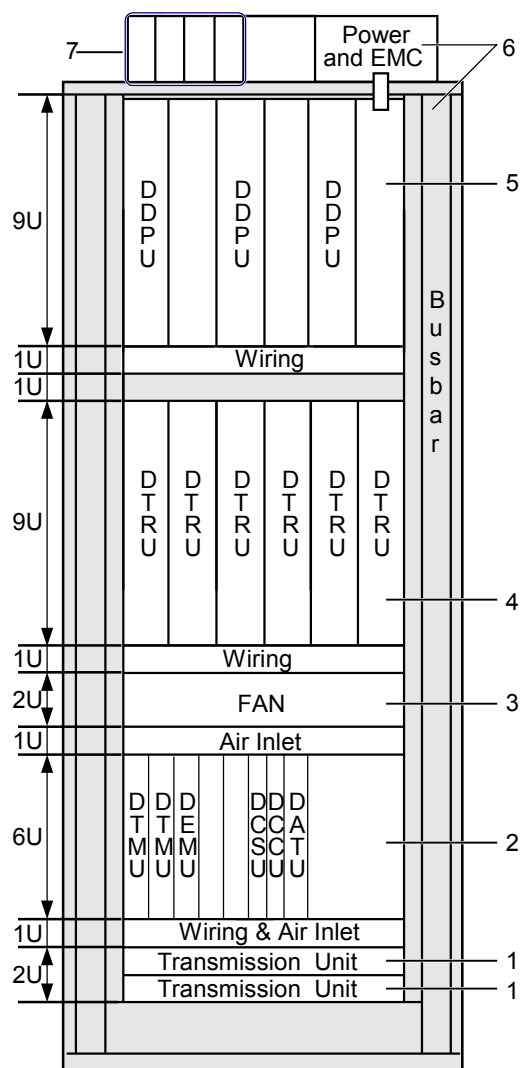
1.3 Physical Structure of the BTS3012

The BTS3012 has the following components: BTS3012 cabinet, antenna system, and Operation and Maintenance (OM) equipment.

Physical Structure of the BTS3012 Cabinet

The BTS3012 cabinet has the following components: DAFU subrack, DTRU subrack, fan subrack, common subrack, top subrack, transmission subrack, and power supply unit.

Figure 1-2 shows a fully configured BTS3012 under S4/4/4 cell configuration.

Figure 1-2 Fully configured BTS3012 cabinet

- | | | |
|--------------------------|--------------------|-----------------------|
| (1) Transmission subrack | (2) Common subrack | (3) FAN subrack |
| (4) DTRU subrack | (5) DAFU subrack | (6) Power supply unit |
| (7) Cabinet top subrack | | |

- DAFU Subrack

The DAFU subrack can be configured with **DDPU**, **DCOM**, **DFCU**, or **DFCB**.

For details about the DAFU subrack, refer to **5 BTS3012 RF Front-End Subsystem**.

- DTRU Subrack

One DTRU subrack supports up to six **DTRUs**.

For details about the DTRU subrack, refer to **4 BTS3012 Double-Transceiver Subsystem**.

- FAN Subrack

The FAN subrack has only one FAN box inside it. The FAN box contains one fan monitoring board and four fans. The fan monitoring board detects the temperature at the air inlets at the bottom of the cabinet, and adjusts the speed and working status of the fans.

For details about the fan subrack, refer to [FAN Box](#).

- Common Subrack

The common subrack is below the fan subrack. It is configured with the following parts:

- [DTMU](#)
- [DEMU](#)
- [DATU](#)
- [DCSU](#)
- [DCCU](#)

For details about the common subrack, refer to [2 BTS3012 Common Subsystem](#).

- Cabinet Top Subrack

The cabinet top subrack is located at the top of the BTS3012 cabinet. It is configured with the following parts:

- [DMLC](#)
- [DELC](#)
- [DSAC](#)

For details about the cabinet top subrack, refer to [3 BTS3012 Signal Protection Subsystem](#).

- Power Supply Unit

The power supply unit consists of the DC lightning arrester, EMI filter, PGND bar, busbar terminal socket on top of the cabinet, and the Busbar in the right of the cabinet.

For details about the power supply unit, refer to [7 BTS3012 Power Subsystem](#).

- Transmission Subrack

The transmission subrack is below the common subrack. The transmission subrack reserves space for installing the Baseband Unit (BBU). The SDH and microwave transmission equipment can be installed in the transmission subrack

Physical Structure of the Antenna System

For details about the antenna system, refer to [6 Antenna Subsystem of the BTS](#).

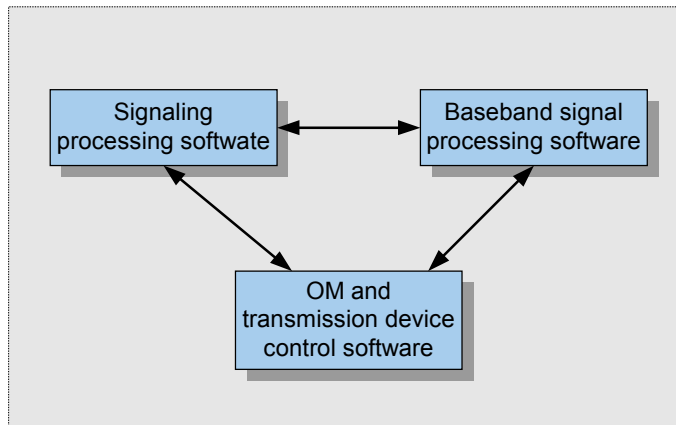
Physical Structure of the Equipment

For details about the equipment, refer to [9 OM of the BTS](#).

1.4 Software Structure of the BTS3012/BTS3012AE

The BTS3012/BTS3012AE software consists of the signaling processing software, baseband signal processing software, OM software, and transmission device control software.

[Figure 1-3](#) shows the software structure of the BTS3012/BTS3012AE.

Figure 1-3 Software structure of the BTS3012/BTS3012AE

Signaling Processing Software

The signaling processing software plays a core role in the BTS3012/BTS3012AE. It processes most services of the BTS3012/BTS3012AE in the unit of TRX. The signaling processing software runs on the DTRU. As the control part of the DTRU, the signaling processing software performs the following functions:

- Transmitting layer 3 messages transparently between the Um interface and the Abis interface
- Helping the BSC manage radio resources
- Implementing part of layer 3 functions on the Um interface
- Implementing LAPD functions on the Abis interface
- Implementing LAPDm functions on the Um interface
- Implementing OM functions for the DTRU

Baseband Signal Processing Software

The baseband signal processing software runs on the DTRU. It performs the following functions:

- Encoding/decoding voice, data, and signaling on the radio channels
- Demodulating received signals
- Processing the signals on the Um interface by using the circuits on the digital signal processing part of the DTRU

OM and Transmission Device Control Software

The OM software runs on the DTMU. It is the common control part of the software of the BTS3012/BTS3012AE and the core of the OM system of the BTS3012/BTS3012AE.

The OM software performs the following functions:

- Downloading BTS software
- Initializing the BTS
- Monitoring and managing the operation of the BTS
- Collecting alarm information

- Tracing resources usage and interface messages

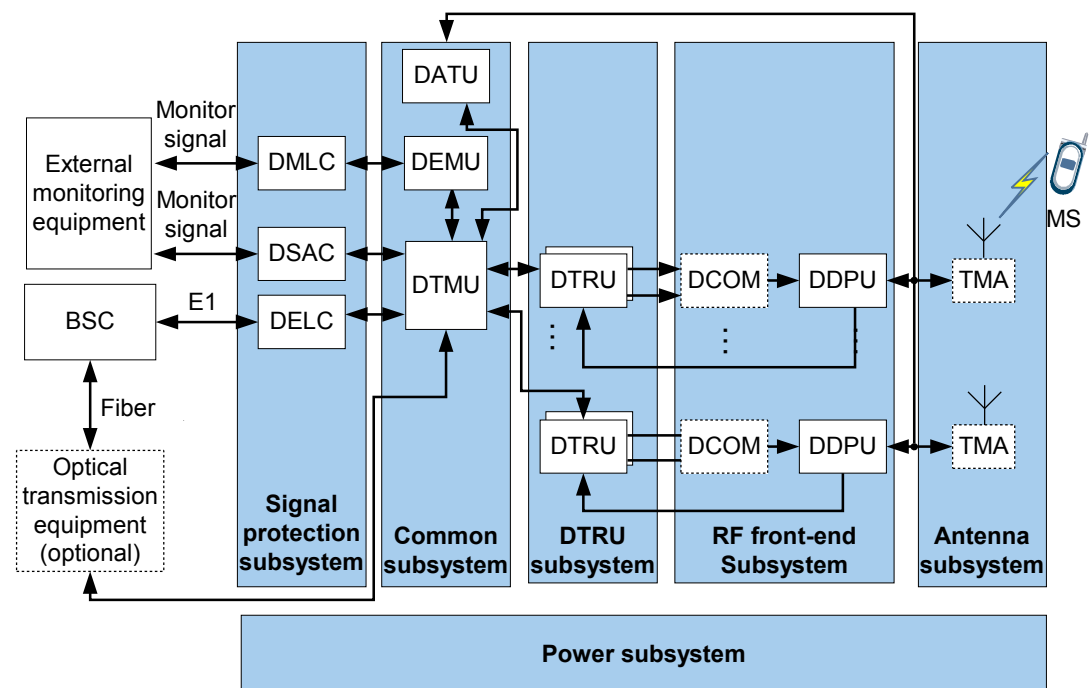
The transmission device control software serves as a module of the OM software. It controls the transmission links between the BSC and the BTS. The transmission link between the BTS and the BSC can be flexibly configured through the transmission device control software. Multiple topologies, such as star, tree, and chain topologies, can be implemented to meet the requirements for different application scenarios and for different traffic volume. The transmission device control software also enables the DTMU to perform remote loopback tests.

1.5 Logical Structure of the BTS3012

The BTS3012 consists of the following logical subsystems: common subsystem, signal protection subsystem, DTRU subsystem, DAFU subsystem, antenna subsystem, and power subsystem.

Figure 1-4 shows the logical structure of the BTS3012.

Figure 1-4 Logical structure of the BTS3012



NOTE

The equipment in dotted box shown in **Figure 1-4** is optional. In addition, the RF subsystem can also be configured with the DFCU and DFCB.

For details about the subsystems of the BTS3012, refer to the following sections:

- **Common Subsystem**
- **Signal Protection Subsystem**
- **Double-Transceiver Subsystem**
- **RF Front-End Subsystem**

- **Antenna Subsystem**
- **Power Supply Subsystem**